

TENTH REPORT OF THE COMMITTEE ON PLANT DISTRIBUTION

The ninth report concluded the family *Gramineae*. The *Cyperaceae*, which would logically follow, have already been dealt with by Prof. Fernald (RHODORA vi. 34). The present report begins with the *Araceae* and with one exception includes the final families of the *Monocotyledoneae*, taken in the order of the eighth edition of Gray's Manual. The *Juncaceae* are not treated, as Prof. Fernald has already done so in a previous report (RHODORA x. 135). Although the *Orchidaceae* were published on by Mr. Emile F. Williams in 1902 (RHODORA iv. 18), they are discussed again at this time.

The data for these reports has been compiled chiefly from the Gray Herbarium and the herbaria of the New England Botanical Club, the Connecticut Botanical Society, the New England Museum of Science, Yale University, the Portland Society of Natural History, Bates College and the University of Maine.

We are indebted to the authorities of the various institutions above mentioned for the privilege of consulting the herbaria under their care and we are particularly indebted to the late C. A. Weatherby for his help and guidance in the preparation of this report.

PRELIMINARY LISTS OF NEW ENGLAND PLANTS—XXXV

The sign + indicates that an herbarium specimen has been seen; the sign - that a reliable printed record has been found.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
ARACEAE						
<i>Acorus Calamus</i> L.	+	+	+	+	+	+
<i>Arisaema atrorubens</i> (Ait.) Blume	+	+	+	+	+	+
<i>Arisaema atrorubens</i> f. <i>viride</i> (Engler) Fern.	+	+	+	+	+	
<i>Arisaema atrorubens</i> f. <i>zebrinum</i> (Sims) Fern.	+		+	+	+	
<i>Arisaema Dracontium</i> (L.) Schott		-	+	+		+
<i>Arisaema Stewardsonii</i> Britton	+	+	+	+	+	+
<i>Arisaema triphyllum</i> (L.) Schott				+		+
<i>Arisaema triphyllum</i> f. <i>pusillum</i> (Peck) Fern.				+		+
<i>Calla palustris</i> L.	+	+	+	+	+	+
<i>Orontium aquaticum</i> L.				+	+	+
<i>Peltandra virginica</i> (L.) Schott and Endl.	+	+	+	+	+	+
<i>Peltandra virginica</i> f. <i>brachyota</i> Blake		+		+		
<i>Peltandra virginica</i> f. <i>hastifolia</i> Blake	+	+		+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Peltandra virginica</i> f. <i>heterophylla</i> (Raf.) Blake				-		
<i>Peltandra virginica</i> f. <i>latifolia</i> (Raf.) Blake	+			+	+	+
<i>Symplocarpus foetidus</i> (L.) Nutt.	+	+	+	+	+	+
LEMNACEAE						
<i>Lemna minor</i> L.	+	+	+	+	+	+
<i>Lemna perpusilla</i> Torr.				+	-	
<i>Lemna trisulca</i> L.	+	+	+	+	+	+
<i>Lemna valdiviana</i> Philippi		+		+	+	+
<i>Spirodela polyrhiza</i> (L.) Schleid.	+	+	+	+	+	+
<i>Wolffia columbiana</i> Karst.			-	+		+
<i>Wolffiella floridana</i> (J. D. Sm.) Thompson				+		
XYRIDACEAE						
<i>Xyris caroliniana</i> Walt.	+	+	+	+	+	+
<i>Xyris caroliniana</i> f. <i>phyllolepis</i> Fern.				-		
<i>Xyris Congdoni</i> Small	+			+	+	+
<i>Xyris montana</i> Ries.	+	+	+	+	+	+
<i>Xyris torta</i> Sm.		+		+	+	+
ERIOCAULACEAE						
<i>Eriocaulon Parkeri</i> Robinson	+			+		+
<i>Eriocaulon septangulare</i> With.	+	+	+	+	+	+
COMMELINACEAE						
<i>Commelina communis</i> L.			-	+	+	+
<i>Commelina diffusa</i> Burm. f.				+		
<i>Commelina virginica</i> L.			-			
<i>Tradescantia ohioensis</i> Raf.				+		+
<i>Tradescantia ohioensis</i> x <i>subaspera</i>				+		
<i>Tradescantia ohioensis</i> x <i>virginiana</i>	+	+		+		+
<i>Tradescantia subaspera</i> Ker.			-			
<i>Tradescantia virginiana</i> L.	+	-	-	+		+
PONTEDERIACEAE						
<i>Heteranthera dubia</i> (Jacq.) Macm.	+		+	+		+
<i>Heteranthera reniformis</i> R. & P.						+
<i>Pontederia cordata</i> L.	+	+	+	+	+	+
<i>Pontederia cordata</i> f. <i>angustifolia</i> (Pursh) Solms	+			+	+	+
<i>Pontederia cordata</i> f. <i>latifolia</i> (Raf.) House	+	+	+	+	+	+
<i>Pontederia cordata</i> f. <i>taenia</i> Fassett	-					
LILIACEAE						
<i>Aletris farinosa</i> L.	+	+		+	+	+
<i>Allium canadense</i> L.	+	+	-	+	+	+
<i>Allium fistulosum</i> L.			+			
<i>Allium oleraceum</i> L.				+		
<i>Allium Schoenoprasum</i> L. var. <i>sibiricum</i> (L.) Hartm.	+	+	+			-
<i>Allium tricoccum</i> Ait.	+	+	+	+	+	+
<i>Allium vineale</i> L.				+	+	+
<i>Asparagus officinalis</i> L.	+	+	+	+	+	+
<i>Chamaelirium luteum</i> (L.) Gray				+		+
<i>Clintonia borealis</i> (Ait.) Raf.	+	+	+	+	+	+
<i>Colchicum autumnale</i> L.		+				
<i>Convallaria majalis</i> L.	+		+	+	+	+
<i>Erythronium americanum</i> Ker.	+	+	+	+	+	+
<i>Erythronium americanum</i> f. <i>castaneum</i> L. B. Smith				+		

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Hemerocallis flava</i> L.			-	+		+
<i>Hemerocallis fulva</i> L.	+	+	+	+	+	+
<i>Hosta japonica</i> (Thunb.) Voss						+
<i>Hosta ventricosa</i> (Salisb.) Stearn				+	+	-
<i>Lilium canadense</i> L.	+	+	+	+	+	+
<i>Lilium canadense</i> f. <i>rubrum</i> Britton			+			
<i>Lilium philadelphicum</i> L.	+	+	+	+	+	+
<i>Lilium philadelphicum</i> f. <i>flaviflorum</i> E. F. Williams	+	+		+		+
<i>Lilium superbum</i> L.		-		+	+	+
<i>Lilium tigrinum</i> Ker.	+	+	+	+	+	+
<i>Maianthemum canadense</i> Desf.	+	+	+	+	+	+
<i>Medeola virginiana</i> L.	+	+	+	+	+	+
<i>Melanthium hybridum</i> Walt.						-
<i>Muscari botryoides</i> (L.) Mill.			+	+	+	+
<i>Muscari racemosum</i> (L.) Mill.				+		+
<i>Ornithogalum umbellatum</i> L.	+		+	+	+	+
<i>Polygonatum biflorum</i> (Walt.) Ell.						+
<i>Polygonatum canaliculatum</i> (Muhl.) Pursh		+	+	+	+	+
<i>Polygonatum latifolium</i> (Jacq.) Desf.				+		
<i>Polygonatum pubescens</i> (Willd.) Pursh	+	+	+	+	+	+
<i>Polygonatum pubescens</i> f. <i>fultius</i> Fern. & Harris			-	+		
<i>Scilla sibirica</i> Andr.				+		
<i>Smilacina racemosa</i> (L.) Desf.	+	+	+	+	+	+
<i>Smilacina racemosa</i> var. <i>cylindrata</i> Fern.		+	+	+	+	+
<i>Smilacina stellata</i> (L.) Desf.	+	+	+	+	+	+
<i>Smilacina stellata</i> var. <i>cressa</i> Vict.				+		+
<i>Smilacina trifolia</i> (L.) Desf.	+	+	+	+	+	+
<i>Smilax Bona-nox</i> L. var. <i>hederaefolia</i> (Beyr.) Fern.				+		
<i>Smilax glauca</i> Walt. var. <i>leurophylla</i> Blake				+	+	+
<i>Smilax herbacea</i> L.	+	+	+	+	+	+
<i>Smilax pulverulenta</i> Michx.					+	
<i>Smilax rotundifolia</i> L.	+	+		+	+	+
<i>Smilax tamnoides</i> L. var. <i>hispida</i> (Muhl.) Fern.						-
<i>Streptopus amplexifolius</i> (L.) DC. var. <i>americanus</i> Schultes	+	+	+	+		+
<i>Streptopus amplexifolius</i> var. <i>oreopolus</i> (Fern.) Fassett	+	+				
<i>Streptopus roseus</i> Mich. var. <i>perspectus</i> Fassett	+	+	+	+	+	+
<i>Tofieldia glutinosa</i> (Mich.) Pers.	+	+	+			
<i>Trillium cernuum</i> L.	+	+	+	+	+	+
<i>Trillium cernuum</i> var. <i>macranthum</i> Wieg.			+	+		+
<i>Trillium erectum</i> L.	+	+	+	+	+	+
<i>Trillium erectum</i> f. <i>albiflorum</i> R. Hoffm.	+			+		
<i>Trillium erectum</i> f. <i>luteum</i> Louis-Marie	+	+	+	+		+
<i>Trillium grandiflorum</i> (Michx.) Salisb.	+	+	+	-		+
<i>Trillium undulatum</i> Willd.	+	+	+	+	+	+
<i>Trillium undulatum</i> f. <i>Cleavelandicum</i> (Wood) Fern.	+	+				
<i>Trillium undulatum</i> f. <i>polymerum</i> Victorin	+	+	+	+		
<i>Uvularia grandiflora</i> Sm.		+	+	+		+
<i>Uvularia perfoliata</i> L.			+	+	+	+
<i>Uvularia sessilifolia</i> L.	+	+	+	+	+	+
<i>Veratrum viride</i> Ait.	+	+	+	+	+	+
<i>Yucca Smalliana</i> Fern.				+		+
<i>Zigadenus glaucus</i> Nutt.			+			

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
HAEMODORACEAE						
<i>Lachnanthes tinctoria</i> (Walt.) Ell.				+	+	+
DIOSCOREACEAE						
<i>Dioscorea villosa</i> L.				+	+	+
<i>Dioscorea villosa</i> f. <i>glabrifolia</i> (Bartlett) Fern.					+	+
AMARYLLIDACEAE						
<i>Hypoxis hirsuta</i> (L.) Coville	-	+	-	+	+	+
<i>Leucojum aestivum</i> L.	+					+
<i>Narcissus poeticus</i> L.	-			-		+
<i>Narcissus Pseudo-Narcissus</i> L.			-	+		-
IRIDACEAE						
<i>Belamcanda chinensis</i> (L.) DC.			+			+
<i>Crocus vernus</i> All.				+		
<i>Iris germanica</i> L.				-		+
<i>Iris Hookeri</i> Penny	+					
<i>Iris laevigata</i> Fisch.						-
<i>Iris orientalis</i> Mill.						+
<i>Iris prismatica</i> Pursh	+	+		+	+	+
<i>Iris prismatica</i> x <i>versicolor</i>				+		
<i>Iris pumila</i> L.	+					
<i>Iris Pseudacorus</i> L.			+	+	+	+
<i>Iris versicolor</i> L.	+	+	+	+	+	+
<i>Sisyrinchium angustifolium</i> Mill.	+	+	+	+	+	+
<i>Sisyrinchium arenicola</i> Bicknell				+	+	+
<i>Sisyrinchium atlanticum</i> Bicknell	+	+	+	+	+	+
<i>Sisyrinchium montanum</i> Greene var. <i>crebrum</i> Fern.	+	+	+	+	+	+
<i>Sisyrinchium mucronatum</i> Michx.	+		+	+		+
ORCHIDACEAE						
<i>Aplectrum hiemale</i> (Muhl.) Torr.			+	+		-
<i>Arethusa bulbosa</i> L.	+	+	+	+	+	+
<i>Calopogon pulchellus</i> (Salisb.) R. Br.	+	+	+	+	+	+
<i>Calypso bulbosa</i> (L.) Oakes	+	+	+	+		
<i>Corallorhiza maculata</i> Raf.	+	+	+	+	+	+
<i>Corallorhiza maculata</i> f. <i>flavida</i> (Peck) Farwell	+		-			-
<i>Corallorhiza odontorhiza</i> (Willd.) Nutt.	+		+	+	+	+
<i>Corallorhiza odontorhiza</i> f. <i>flavida</i> Wherry						-
<i>Corallorhiza trifida</i> Chatelain var. <i>verna</i> (Nutt.) Fern.	+	+	+	+	+	+
<i>Cypripedium acaule</i> Ait.	+	+	+	+	+	+
<i>Cypripedium acaule</i> f. <i>albiflorum</i> Rand & Red.	+	+	-	-		
<i>Cypripedium arietinum</i> R. Br.	+	+	+	+		
<i>Cypripedium Calceolus</i> L. var. <i>parviflorum</i> (Salisb.) Fern.	+	+	+	+		+
<i>Cypripedium Calceolus</i> L. var. <i>pubescens</i> (Willd.) Correll	+	+	+	+	+	+
<i>Cypripedium reginae</i> Walt.	+	-	+	+		+
<i>Epipactis Helleborine</i> (L.) Crantz		-	+	+		+
<i>Goodyera oblongifolia</i> Raf.	+		-			
<i>Goodyera pubescens</i> (Willd.) R. Br.	+	+	+	+	+	+
<i>Goodyera repens</i> (L.) R. Br. var. <i>ophioides</i> Fern.	+	+	+	+		+
<i>Goodyera tessellata</i> Lodd.	+	+	+	+		+
× <i>Habenaria Andrewsii</i> M. White ( <i>lacera</i> x <i>psycodes</i> )	+	+	+	+		+
<i>Habenaria blephariglottis</i> (Willd.) Hook.	+	+	+	+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Habenaria ciliaris</i> (L.) R. Br.			-	+	+	+
<i>Habenaria cristata</i> (Michx.) R. Br.				+		
<i>Habenaria clavellata</i> (Michx.) Spreng.	+	+	+	+	+	+
<i>Habenaria clavellata</i> var. <i>ophioglossoides</i> Fern.	+	+	+	+	+	
<i>Habenaria dilatata</i> (Pursh) Hook.	+	+	+	+		+
<i>Habenaria fimbriata</i> (Ait.) R. Br.	+	+	+	+	+	+
<i>Habenaria fimbriata</i> f. <i>albiflora</i> Rand & Redfield	+	+				
<i>Habenaria fimbriata</i> f. <i>mentotonsa</i> Fern.	+					
<i>Habenaria fimbriata</i> x <i>hyperborea</i>			-			
<i>Habenaria flava</i> (L.) Spreng. var. <i>herbiola</i> (R. Br.) Ames & Correll	+	+	+	+	+	+
<i>Habenaria Hookeri</i> Torr.	+	+	+	+		+
<i>Habenaria hyperborea</i> (L.) R. Br.	+	+	+	+	+	+
<i>Habenaria hyperborea</i> var. <i>huronensis</i> (Nutt.) Farw.			-			
<i>Habenaria lacera</i> (Michx.) Lodd.	+	+	+	+	+	+
<i>Habenaria leucophaea</i> (Nutt.) Gray	+		-			
<i>Habenaria macrophylla</i> Goldie	+	+	+	+		-
× <i>Habenaria media</i> (Rydb.) Niles		-	+			
<i>Habenaria obtusata</i> (Pursh) Richards.	+	+	+	+		
<i>Habenaria orbiculata</i> (Pursh) Torr.	+	+	+	+		-
<i>Habenaria psycodes</i> (L.) Spreng.	+	+	+	+	-	+
<i>Habenaria psycodes</i> f. <i>albiflora</i> (Bigel.) R. Hoffm.			-	-		
<i>Habenaria psycodes</i> f. <i>ecalcarata</i> (Bryan) Dole			-			
<i>Habenaria viridis</i> (L.) R. Br. var. <i>bracteata</i> (Muhl.) Gray	+	+	+	+	+	+
<i>Isotria medeoloides</i> (Pursh) Raf.	-	+		+	+	+
<i>Isotria verticillata</i> (Willd.) Raf.	+	+	+	+	+	+
<i>Liparis liliifolia</i> (L.) Richard		-	+	+		+
<i>Liparis Loeselii</i> (L.) Richard	+	+	+	+	+	+
<i>Listera auriculata</i> Wiegand	+	+	+			
<i>Listera australis</i> Lindl.			+			
<i>Listera convallarioides</i> (Sw.) Nutt.	+	+	+			
<i>Listera cordata</i> (L.) R. Br.	+	+	+	+	+	
<i>Malaxis brachypoda</i> (Gray) Fern.	+	+	+	+		+
<i>Malaxis unifolia</i> Michx.	+	+	+	+	+	+
<i>Orchis rotundifolia</i> Banks	+		+			
<i>Orchis spectabilis</i> L.	+	+	+	+	-	+
<i>Pogonia ophioglossoides</i> (L.) Ker.	+	+	+	+	+	+
<i>Pogonia ophioglossoides</i> f. <i>albiflora</i> Rand & Red.				-		
<i>Spiranthes cernua</i> (L.) Richard	+	+	+	+	+	+
<i>Spiranthes cernua</i> var. <i>ochroleuca</i> (Rydb.) Ames	+	+	-	+		+
<i>Spiranthes gracilis</i> (Bigel.) Beck	+	+		+	+	+
<i>Spiranthes lacera</i> Raf.	+	+	+	+	+	
<i>Spiranthes lacera</i> x <i>Romanzoffiana</i>	+					
<i>Spiranthes lucida</i> (H. H. Eaton) Ames	+	+	+	+		+
<i>Spiranthes Romanzoffiana</i> Cham.	+	+	+	+		+
<i>Spiranthes tuberosa</i> Raf. var. <i>Grayi</i> (Ames) Fern.	+	+		+	+	+
<i>Spiranthes vernalis</i> Engelm. & Gray		+		+	+	+
<i>Tipularia discolor</i> (Pursh) Nutt.			-	+		+
<i>Triphora trianthophora</i> (Sw.) Rydb.	-	+	+			+

Two species which might have been included in the above list have very dubious claims to a place in the New England Flora. *Sisyrinchium albidum* was found once on Drake's Island, Wells, in York County, Maine. Its natural range is much farther to the west and its inclusion in our floral area is extremely doubtful. The report of *Gymnadenia conopsea*, a European orchid, at Litchfield, Connecticut, is authenticated by a specimen collected by Miss Anna M. Vail and now in the herbarium of the Torrey Botanical Club. This collection, the only one known from North America, is cited in "Additions to the Flora of Connecticut," Bulletin 48, State Geological and Natural History Survey, 1930. No one has ever been able to relocate the station.

In the list of plants which are discussed in this article the nomenclature of the Eighth Edition of Gray's Manual has been followed and so no references to RHODORA or other botanical literature has seemed necessary,

One of the introduced species listed is, strangely enough, an orchid, *Epipactis Helleborine*. Williams did not include it in his 1902 list but commented on its introduction at Stockbridge, Mass. where "it was hardly likely to persist, as it selected a hedge along the main street for a habitat." It has, however, persisted and now we have seen specimens from three states and reliable records from a fourth. In 1948 another station was reported at Stockbridge and a new one at Coventry, Conn.

An introduced species which is familiar to everyone is *Hemerocallis fulva*. It originated in China and does not set seed. All the thousands of plants growing all over the country are the progeny of a single individual. It is an example of the efficiency of vegetative multiplication.

Geographically the species here considered fall into groups which have already been used and defined in previous reports. Varieties and forms which seem to have no geographic significance in our area are omitted as usual.

I. GENERALLY DISTRIBUTED.—*Acorus Calamus*, *Eriocaulon septangulare*, *Pontederia cordata*, *Maianthemum canadense*, *Medeola virginica*, *Trillium cernuum*, *Uvularia sessilifolia*, *Iris versicolor*, *Sisyrinchium montanum* var. *crebrum*, *Arethusa bulbosa*, *Calopogon pulchellus*, *Corallorhiza maculata*, *Cypripedium acaule*, *Habenaria fimbriata*, *Liparis Loeslii*, *Malaxis unifolia*, *Pogonia ophioglossoides*.

While the above species are widely distributed, this does not mean that they occur in the same relative abundance. For example, *Iris versicolor* occurs in masses, but *Arethusa bulbosa*, if you reach the proper habitat, will yield comparatively few individuals. *Acorus Calamus* and *Pontederia cordata* are not found in northern Maine though otherwise are generally distributed. *Trillium cernuum* is not represented from the outer towns on the tip of Cape Cod nor on Martha's Vineyard or Nantucket. There are several of the orchids which are not found in the outer townships of Cape Cod—*Arethusa bulbosa*, *Corallorhiza maculata*, *Habenaria fimbriata* and *Malaxis unifolia*. This is probably due to the lack of a suitable habitat.

II. RATHER GENERAL EXCEPT NORTHERN MAINE AND WASHINGTON COUNTY COAST.—*Arisaema atrorubens*, *A. Stewardsonii*, *Symplocarpus foetidus*, *Lemna minor*, *Spirodela polyrhiza*, *Lilium philadelphicum*, *Polygonatum pubescens*, *Sisyrinchium angustifolium*, *Goodyera pubescens*, *Habenaria lacera*, *Spiranthes cernua*.

*Arisaema atrorubens* and *A. Stewardsonii* do not reach Nantucket. *Spirodela polyrhiza* and *Goodyera pubescens* are not found on either Martha's Vineyard or Nantucket, nor do they occur in the outer townships of Cape Cod. *Symplocarpus foetidus* has a rather thin representation in the northern part of its range.

III. RATHER GENERAL EXCEPT IN SOUTHEASTERN MASSACHUSETTS AND WASHINGTON COUNTY COAST.—*Allium tricoccum*, *Erythronium americanum*, *Veratrum viride*, *Cypripedium Calceolus* var. *parviflorum* and var. *pubescens*, *C. reginae*, *Habenaria flava* var. *herbiola*, *H. Hookeri*, *H. hyperborea*, *H. viridis* var. *bracteata*, *Orchis spectabilis*.

Some of these species are definitely infrequent in northern Maine. Aroostook County is represented by only two specimens of *Erythronium americanum* and by only one each of *Allium tricoccum* and *Habenaria flava* var. *herbiola*; *Orchis spectabilis* has only one station north of 45° in Maine.

IV. RATHER GENERAL EXCEPT SOUTHEASTERN MASSACHUSETTS.—*Calla palustris*, *Clintonia borealis*, *Lilium canadense*, *Smilacina trifolia*, *Streptopus roseus* var. *perspectus*, *Trillium erectum*, *T. undulatum*, *Corallorhiza trifida*.

V. RATHER GENERAL EXCEPT THE WASHINGTON COUNTY COAST.—*Smilacina racemosa*, *S. stellata*, *Smilax herbacea*, *Habenaria blephariglottis*, *H. psycodes*.

*Smilacina stellata*, except for extreme northern Maine, seems to be lacking in most of the eastern part of the state. *Habenaria blephariglottis* is absent from western Vermont and largely from western Massachusetts and is also absent on the coast east of Casco Bay. *Habenaria psycodes* is not found in the lower Cape Cod area nor on Nantucket.

VI. NORTHERN, WITH NUMEROUS STATIONS SOUTH OF 43°.—*Goodyera repens* var. *ophioides*, *G. tessellata*, *Habenaria clavellata* var. *ophioglossoides*, *H. dilatata*, *H. macrophylla*, *H. orbiculata*, *Spiranthes lacera*.

*Habenaria clavellata* was recently divided by Prof. Fernald (RHODORA xlviii. 161) and he points out that the typical plant with long petiolate leaves is definitely southern with outlying stations, many of them transitional, in central New Hampshire, along the Maine coast and at Houlton, Ft. Fairfield, and Ft. Kent. The variety *ophioglossoides* with short broad leaves is definitely northern with outposts as far south as Cape Cod and Providence. In like manner the material passing as *Spiranthes gracilis* was recently shown by Prof. Fernald to fall into two distinct species, *S. gracilis* and *S. lacera* (RHODORA xlviii. 5). Although *S. lacera* is the northern segregate, it is entirely absent in northern Maine.

VII. NORTHERN, NOT MUCH SOUTH OF 43°.—*Allium Schoenoprasum* var. *sibiricum*, *Streptopus amplexifolius* var. *americanus*, *Tofieldia glutinosa*, *Calypso bulbosa*, *Cypripedium arietinum*, *Goodyera oblongifolia*, *Habenaria obtusata*, *Listera auriculata*, *L. cordata*, *L. convallarioides*, *Malaxis brachypoda*, *Orchis rotundifolia*, *Spiranthes Romanzoffiana*.

*Orchis rotundifolia* definitely belongs in this group, but there are very few specimens upon which to base such a classification. These comprise four from Maine and five from Vermont. *Goodyera oblongifolia* occurs in extreme northern Aroostock County, Maine and there are two records from Vermont. *Streptopus amplexifolius* var. *americanus*, *Malaxis brachypoda* and *Spiranthes Romanzoffiana*, unlike the other species in this group, have a few stations in western Massachusetts and Connecticut.

VIII. CHIEFLY THE THREE SOUTHERN STATES.—*Peltandra virginica*, *Lemna perpusilla*, *Xyris caroliniana*, *Aletris farinosa*, *Allium canadense*, *Smilacina racemosa* var. *cylindrata*, *Smilax rotundifolia*, *Hypoxis hirsuta*, *Sisyrinchium atlanticum*, *Habenaria clavellata*.



Some of these species are found along the Maine coast; *Sisyrinchium atlanticum*, for example, extends as far as Eastport. *Lemna perpusilla* and *Smilacina racemosa* var. *cylindrata*, however, do not appear in Maine at all and *Hypoxis* is represented by only a single record. *Lemna perpusilla* is only represented from Duxbury, Plympton, and Stockbridge, Mass. and Barrington, R. I.

IX. CHIEFLY THE THREE SOUTHERN STATES BUT NOT IN WESTERN MASSACHUSETTS.—*Arisaema triphyllum*, *A. triphyllum* f. *pusillum*, *Orontium aquaticum*, *Lemna valdiviana*, *Xyris torta*, *Habenaria ciliaris*, *H. cristata*, *Spiranthes gracilis*, *S. tuberosa* var. *Grayi*.

The only record of *Habenaria cristata*, a species of more southern distribution, is from South Dartmouth, Mass., where it has not been found in recent years. It is very questionably included in our flora.

X. CHIEFLY THE THREE SOUTHERN STATES BUT NOT ON CAPE COD.—*Polygonatum canaliculatum*, *Uvularia perfoliata*, *Corallorhiza odontorhiza*, *Isotria medeoloides*, *I. verticillata*, *Triphora trianthophora*.

XI. CHIEFLY THE THREE SOUTHERN STATES BUT NEITHER CAPE COD NOR IN WESTERN MASSACHUSETTS.—*Dioscorea villosa*, *Spiranthes vernalis*.

There is only one station for *Dioscorea villosa* in Massachusetts.

XII. COASTAL PLAIN.—*Xyris Congdoni*, *Lilium superbum*, *Smilax Bonanox* var. *hederaefolia*, *S. glauca* var. *leurophylla*, *Lachnanthes tinctoria*, *Iris prismatica*, *Sisyrinchium arenicola*.

Judging from the distribution of their stations *Smilax Bonanox* var. *hederaefolia*, *Lachnanthes tinctoria* and *Sisyrinchium arenicola* are true coastal plain plants, though *Lachnanthes tinctoria* does not occur on either Martha's Vineyard or Nantucket and the only occurrence of *Smilax Bonanox* var. *hederaefolia* is on Nantucket. The other species extend inland to some extent and are more coastal than coastal plain in nature.

XIII. WESTERN NEW ENGLAND ONLY.—*Arisaema Dracontium*, *Chamaelirium luteum*, *Trillium grandiflorum*, *Uvularia grandiflora*, *Aplectrum hyemale*, *Liparis liliifolia*.

While there is a station for *Trillium grandiflorum* in Maine and one in New Hampshire, the species otherwise in the New England area is decidedly western. *Chamaelirium luteum* is confined to western Connecticut and southwestern Massachu-

setts. *Liparis liliifolia* seems to belong here but it also has stations in the eastern Massachusetts rich woods area.

XIV. MARITIME WITH NO INLAND STATIONS.—*Iris Hookeri*.

This species is the only representative of this group and in New England it is confined to the Maine coast east of the Penobscot River.

XV. ESTUARINE.—*Eriocaulon Parkeri*.

XVI. INTRODUCED SPECIES.—*Commelina communis*, *C. diffusa*, *C. virginica*, *Tradescantia ohioensis*, *T. subaspera*, *T. virginiana*, *Allium fistulosum*, *A. oleraceum*, *A. vineale*, *Asparagus officinalis*, *Colchicum autumnale*, *Convallaria majalis*, *Hemerocallis flava*, *H. fulva*, *Hosta japonica*, *H. ventricosa*, *Lilium tigrinum*, *Muscari botryoides*, *M. racemosum*, *Polygonatum latifolium*, *Scilla sibirica*, *Yucca Smalliana*, *Leucojum aestivum*, *Narcissus poeticus*, *N. Pseudo-Narcissus*, *Belamcanda chinensis*, *Crocus vernus*, *Iris germanica*, *I. laevigata*, *I. orientalis*, *I. pumila*, *I. Pseudacorus*, *Epipactis Helleborine*.

Many of these introduced species merely persist without showing much evidence of becoming aggressive though *Allium vineale*, occurring only in southern New England, has become a bad weed in some places.

XVII. MISCELLANEOUS.—*Lemna trisulca*, *Xyris montana*, *Heteranthera dubia*, *H. reniformis*, *Melanthium latifolium*, *Polygonatum biflorum*, *Streptopus amplexifolius* var. *oreopolos*, *Sisyrinchium mucronatum*, *Habenaria Andrewsii*, *H. clavellata*, *Spiranthes lucida*.

*Lemna trisulca* might be classified as chiefly in the three southern states, but it occurs up the Champlain Valley, at the mouth of the Penobscot River and there is one station in Aroostook County. *Xyris montana*, while it has one station in Aroostook County, is otherwise all south of 45°. *Heteranthera dubia* and *Sisyrinchium mucronatum* occur for the most part in Connecticut and southwestern Massachusetts, but with outlying stations in the Penobscot Valley in Maine and also in the Champlain Valley. *Heteranthera reniformis*, *Melanthium hybridum* and *Polygonatum biflorum* are found only in southwestern Connecticut with too few stations to be classified definitely in New England. *Streptopus amplexifolius* var. *oreopolos* in New England occurs only on Mt. Washington and Mt. Katahdin. *Habenaria clavellata* is distinctly southern but it occurs in all the New England states and does not fit into any of the above groups. x H.

*Andrewsii* is found occasionally with its parents. *Spiranthes lucida*, a southern species, extends northward throughout Vermont and as far east as central Maine. It is not found in Rhode Island nor west of the Connecticut River in Massachusetts.

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## PENTHORUM: ITS CHROMOSOMES

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PENTHORUM L. is of widespread occurrence in North America and Asia and is variously interpreted to consist of one, two, or three species. The genus is found, as *P. sedoides* L., from New Brunswick to Texas, from Ontario and Minnesota to Florida. It grows in wet low places and exhibits the extreme vegetative variability often expressed by plants subjected to periodic inundations. Representatives of the genus in Asia are frequently referred to this same species.

The affinities of *Penthorum* are puzzling. The genus has sometimes been placed in the *Crassulaceae*; for example: De Candolle (1828) established Tribe *Crassulaceae Anomalae* for *Diamorpha* Nutt. and *Penthorum*; Torrey and Gray (1840) put these genera together in Tribe *Diamorpheae*; Schönland (1894) incorporated *Penthorum* between *Diamorpha* and *Triactina* Hook. f. & Th. But Berger (1930) omitted *Penthorum* from his monograph on the *Crassulaceae*, and Fernald (1950) broke with the practice in the previous editions of *Gray's Manual* by assigning this genus to the *Saxifragaceae* rather than to the *Crassulaceae*. This accords with the work of certain other investigators. Baillon (1872) referred *Penthorum* to a monotypic tribe, and Engler (1930) to a monotypic subfamily, of the *Saxifragaceae*. On the basis of morphological and anatomical data, van Tieghem (1899) erected the *Penthoraceae* as a family for the genus, and Rydberg (1932) and Small (1933) followed van Tieghem's treatment.

In the course of embryological studies of American and Asiatic plants of *Penthorum sedoides*, Rocén (1928) counted eight prophase chromosomes in embryo-sac and pollen-mother-cell divi-